

What is claimed is:

1 1. A controlling method of priority class setup in a  
2 communication system in which classified communication quality  
3 based on a priority class of a communication packet transmitted  
4 and received between a sender and a receiver via a communication  
5 network is to be provided, said controlling method of priority  
6 class setup comprising the steps of:

7 monitoring communication quality of said communication  
8 network by transmitting a performance monitoring packet from  
9 said sender to said receiver prior to transmission of said  
10 communication packet; and

11 deciding a priority class of said communication packet  
12 and transmitting said communication packet by the sender based  
13 on a result of the monitoring.

1 2. A controlling method of priority class setup in a  
2 communication system in which classified communication quality  
3 based on a priority class of a communication packet transmitted  
4 and received between a sender and a receiver via a communication  
5 network is to be provided, said controlling method of priority  
6 class setup comprising the steps of:

7 monitoring communication quality of said communication  
8 network by transmitting a performance monitoring packet from  
9 said sender to said receiver in the midst of communication; and

10 deciding a priority class of said communication packet  
11 and transmitting said communication packet by the sender based  
12 on a result of the monitoring.

1 3. The controlling method of priority class setup according  
2 to claim 1,

3 wherein said monitoring step includes the steps of:

4 transmitting said performance monitoring packet from said  
5 sender initially by setting up a predetermined priority class;  
6 and

7 receiving said performance monitoring packet and  
8 returning the received performance monitoring packet to said  
9 sender as a performance monitoring result packet.

1 4. The controlling method of priority class setup according  
2 to claim 2,

3 wherein said monitoring step includes the steps of:

4 transmitting said performance monitoring packet from the  
5 sender initially by setting up a predetermined priority class;  
6 and

7 receiving said performance monitoring packet and  
8 returning the received performance monitoring packet to said  
9 sender as a performance monitoring result packet.

1 5. The controlling method of priority class setup according  
2 to claim 3,

3 wherein said deciding step of a priority class includes  
4 the steps of:

5 receiving said performance monitoring result packet by  
6 said sender and judging as to whether requested communication  
7 quality by said communication packet is satisfactory;

8           resending said performance monitoring packet from said  
9 sender by shifting said priority class up by one class in a case  
10 where said requested communication quality is judged as  
11 unsatisfactory in said judging step;

12           iterating said returning step, said judging step and said  
13 resending step afterward, until any one of events that said  
14 requested communication quality becomes satisfactory and that  
15 said priority class reaches a highest priority class; and

16           setting up said communication packet ultimately to any  
17 one of a priority class by which said requested communication  
18 quality becomes satisfactory and said highest priority class.

1   6. The controlling method of priority class setup according  
2 to claim 4,

3           wherein said deciding step of a priority class includes  
4 the steps of:

5           receiving said performance monitoring result packet by  
6 said sender and judging as to whether requested communication  
7 quality by said communication packet is satisfactory;

8           resending said performance monitoring packet from said  
9 sender by shifting said priority class up by one class in a case  
10 where said requested communication quality is judged as  
11 unsatisfactory in said judging step;

12           iterating said returning step, said judging step and said  
13 resending step afterward, until any one of events that said  
14 requested communication quality becomes satisfactory and that  
15 said priority class reaches a highest priority class; and

16           setting up said communication packet ultimately to any

17 one of a priority class by which said requested communication  
18 quality becomes satisfactory and said highest priority class.

1 7. The controlling method of priority class setup according  
2 to claim 5, further including the steps of:

3 shifting said priority class down by one class in a case  
4 where said requested communication quality is judged as  
5 satisfactory in said judging step and resending said performance  
6 monitoring packet from said sender;

7 iterating said returning step, said judging step and said  
8 second resending step afterward, until any one of events that  
9 said requested communication quality becomes unsatisfactory and  
10 that said priority class reaches a lowest priority class; and

11 setting up said communication packet ultimately to any  
12 one of a priority class precedent to a class by which said requested  
13 communication quality becomes unsatisfactory and said lowest  
14 priority class.

1 8. The controlling method of priority class setup according  
2 to claim 6, further including the steps of:

3 resending said performance monitoring packet from said  
4 sender by shifting said priority class down by one class in a  
5 case where said requested communication quality is judged as  
6 satisfactory in said judging step;

7 iterating said returning step, said judging step and said  
8 second resending step afterward, until any one of events that  
9 said requested communication quality becomes unsatisfactory and  
10 that said priority class reaches a lowest priority class; and

11            setting up said communication packet ultimately to any  
 12 one of a priority class precedent to a class by which said requested  
 13 communication quality becomes unsatisfactory and said lowest  
 14 priority class.

1    9. The controlling method of priority class setup according  
 2 to claim 1, wherein said deciding step further includes deciding  
 3 said priority class in a case where said receiver is plural,  
 4 in a manner that a highest priority class among priority classes  
 5 decided with respective receivers is decided as a priority class  
 6 applicable to said communication packet.

1    10. The controlling method of priority class setup according  
 2 to claim 2, wherein said deciding step further includes deciding  
 3 said priority class in a case when said receiver is plural, in  
 4 a manner that a highest priority class among priority classes  
 5 decided with respective receivers is decided as a priority class  
 6 applicable to said communication packet.

1    11. The controlling method of priority class setup according  
 2 to claim 1,            wherein said deciding is executed by said  
 3 receiver in lieu of said sender, and  
 4            said receiver instructs a decided priority class to said  
 5 sender.

1    12. The controlling method of priority class setup according  
 2 to claim 1,            wherein said communication quality is  
 3 magnitude of a delay of packet transmission in said communication

4 network, and

5       said monitoring step measures a delay of transmission of  
6 said performance monitoring packet.

1 13. The controlling method of priority class setup according  
2 to claim 2, wherein said communication quality is  
3 magnitude of a delay of packet transmission in said communication  
4 network, and

5       said monitoring step measures a delay of transmission of  
6 said performance monitoring packet.

1 14. The controlling method of priority class setup according  
2 to claim 1, wherein said communication packet is used in lieu  
3 of said performance monitoring packet.

1 15. The controlling method of priority class setup according  
2 to claim 2, wherein said communication packet is used in lieu  
3 of said performance monitoring packet.

1 16. The controlling method of priority class setup according  
2 to claim 1, further including a step of:

3       accounting in accordance with said priority class and  
4 amounts of packets.

1 17. The controlling method of priority class setup according  
2 to claim 2, further including a step of:

3       accounting in accordance with said priority class and  
4 amounts of packets.

1 18. A controlling method of priority class setup in a  
2 communication system in which a client and a server are connected  
3 via a communication network for distributing a content packet  
4 in correspondence with requests from said client, said  
5 corresponding content packet being distributed from said server  
6 while providing classified communication quality based on a  
7 priority class, said controlling method of priority class setup  
8 comprising the steps of:

9 transmitting a request packet from said client to said  
10 server, said request packet specifying in advance a priority  
11 class upon distribution of said content packet; and

12 transmitting said content packet from said server to said  
13 client with said requested priority class thus specified.

1 19. The controlling method of priority class setup according  
2 to claim 18, further including a step of:

3 modifying said specified priority class of said request  
4 packet in a case where said client judges that said content packet  
5 does not satisfy requested communication quality.

1 20. The controlling method of priority class setup according  
2 to claim 18, further including a step of:

3 performing accounting for said client by said server in  
4 accordance with a priority class and quantity of said content  
5 packet.

1 21. The controlling method of priority class setup according

2 to claim 19, further including a step of:

3 performing accounting for said client by said server in  
4 accordance with a priority class and quantity of said content  
5 packet.

1 22. A controlling system of priority class setup in a  
2 communication system in which classified communication quality  
3 based on a priority class of a communication packet being  
4 transmitted and received between a sender and a receiver via  
5 a communication network is provided,

6 wherein said sender comprises:

7 a monitoring portion for monitoring communication quality  
8 of said communication network by transmitting a performance  
9 monitoring packet to said receiver prior to transmission of said  
10 communication packet; and

11 a priority class deciding portion for deciding a priority  
12 class of said communication packet based on a monitoring result  
13 and transmitting the communication packet by said sender.

1 23. A controlling system of priority class setup in a  
2 communication system in which classified communication quality  
3 based on a priority class of a communication packet being  
4 transmitted and received between a sender and a receiver via  
5 a communication network is provided,

6 wherein said sender comprises:

7 a monitoring portion for monitoring communication quality  
8 of said communication network by transmitting a performance  
9 monitoring packet to said receiver in the midst of transmission



10 of said communication packet; and

11 a priority class deciding portion for deciding a priority  
12 class of said communication packet based on a monitoring result  
13 and transmitting the communication packet.

1 24. The controlling system of priority class setup according  
2 to claim 22,

3 wherein said monitoring portion includes a transmitting  
4 portion for transmitting by said sender said performance  
5 monitoring packet initially by setting up a predetermined  
6 priority class; and

7 said receiver includes a returning portion for receiving  
8 said performance monitoring packet and returning the received  
9 performance monitoring packet to said sender as a performance  
10 monitoring result packet.

1 25. The controlling system of priority class setup according  
2 to claim 23,

3 wherein said monitoring portion includes a transmitting  
4 portion for transmitting by said sender said performance  
5 monitoring packet initially by setting up a predetermined  
6 priority class; and

7 said receiver includes a returning portion for receiving  
8 said performance monitoring packet and returning the received  
9 performance monitoring packet to said sender as a performance  
10 monitoring result packet.

1 26. The controlling system of priority class setup according

2 to claim 24,

3 wherein said priority class deciding portion includes:

4 a judging portion for receiving said performance  
5 monitoring result packet and judging as to whether communication  
6 quality requested by said communication packet is satisfactory;

7 a resending portion for resending said performance  
8 monitoring packet from said sender by shifting said priority  
9 class up by one class, in a case where said requested communication  
10 quality is judged as unsatisfactory in said judging portion;

11 a portion for controlling operations of said returning  
12 portion, said judging portion and said resending portion to be  
13 iterated until any one of events that said requested  
14 communication quality becomes satisfactory and that said  
15 priority class reaches a highest priority class; and

16 a portion for setting up said communication packet  
17 ultimately to any one of a priority class by which said requested  
18 communication quality becomes satisfactory and said highest  
19 priority class.

1 27. The controlling system of priority class setup according  
2 to claim 25,

3 wherein said priority class deciding portion includes:

4 a judging portion for receiving said performance  
5 monitoring result packet and judging as to whether communication  
6 quality requested by said communication packet is satisfactory;

7 a resending portion for resending said performance  
8 monitoring packet from said sender by shifting said priority  
9 class up by one class, in a case where said requested communication

10 quality is judged as unsatisfactory in said judging portion;

11 a portion for controlling operations of said returning  
 12 portion, said judging portion and said resending portion to be  
 13 iterated until any one of events that said requested  
 14 communication quality becomes satisfactory and that the priority  
 15 class reaches a highest priority class; and

16 a portion for setting up said communication packet  
 17 ultimately to any one of a priority class by which said requested  
 18 communication quality becomes satisfactory and said highest  
 19 priority class.

1 28. The controlling system of priority class setup according  
 2 to claim 26, further including:

3 a second resending portion for resending said performance  
 4 monitoring packet from said sender by shifting said priority  
 5 class down by one class in a case where said requested  
 6 communication quality is judged as satisfactory in said judging  
 7 portion;

8 a portion for controlling operations of said returning  
 9 portion, said judging portion and said second resending portion  
 10 to be iterated afterward until any one of events that said  
 11 requested communication quality becomes unsatisfactory and that  
 12 said priority class reaches a lowest priority class; and

13 a portion for setting up said communication packet  
 14 ultimately to any one of a priority class precedent to a class  
 15 by which said requested communication quality becomes  
 16 unsatisfactory and said lowest priority class.

1 29. The controlling system of priority class setup according  
2 to claim 27, further including:

3 a second resending portion for resending said performance  
4 monitoring packet from said sender by shifting said priority  
5 class down by one class in a case where said requested  
6 communication quality is judged as satisfactory in said judging  
7 portion;

8 a portion for controlling operations of said returning  
9 portion, said judging portion and said second resending portion  
10 to be iterated until any one of events that said requested  
11 communication quality becomes unsatisfactory and that said  
12 priority class reaches a lowest priority class; and

13 a portion for setting up said communication packet  
14 ultimately to any one of a priority class precedent to a class  
15 by which said requested communication quality becomes  
16 unsatisfactory and said lowest priority class.

1 30. The controlling system of priority class setup according  
2 to claim 22, wherein said priority class deciding portion decides  
3 said priority class in a case where said receiver is plural,  
4 in a manner that a highest priority class among priority classes  
5 decided with respective receivers is decided as a priority class  
6 applicable to said communication packet.

1 31. The controlling system of priority class setup according  
2 to claim 23, wherein said priority class deciding portion decides  
3 said priority class in a case where said receiver is plural,

4 in a manner that a highest priority class among priority classes  
5 decided with respective receivers is decided as a priority class  
6 applicable to said communication packet.

1 32. The controlling system of priority class setup according  
2 to claim 22, wherein a step of deciding said priority class  
3 is executed by said receiver in lieu of said sender, and  
4 said receiver instructs a decided priority class to said  
5 sender.

1 33. The controlling system of priority class setup according  
2 to claim 22, wherein said communication quality is  
3 magnitude of a delay of packet transmission in said communication  
4 network, and  
5 said monitoring portion measures a delay of transmission  
6 of said performance monitoring packet.

1 34. The controlling system of priority class setup according  
2 to claim 23, wherein said communication quality is  
3 magnitude of a delay of packet transmission in said communication  
4 network, and  
5 said monitoring portion measures a delay of transmission  
6 of said performance monitoring packet.

1 35. The controlling system of priority class setup according  
2 to claim 22, wherein said communication packet is used in lieu  
3 of said performance monitoring packet.

36. The controlling system of priority class setup according to claim 23, wherein said communication packet is used in lieu of said performance monitoring packet.

37. The controlling system of priority class setup according to claim 22, further including:

a portion for accounting in accordance with said priority class and amounts of packets.

38. The controlling system of priority class setup according to claim 23, further including:

a portion for accounting in accordance with said priority class and amounts of packets.

39. A controlling system of priority class setup in a communication system in which a client and a server are connected via a communication network for distributing a content packet in correspondence with requests from said client, said corresponding content packet being distributed from said server while providing classified communication quality based on a priority class,

wherein said client includes a portion for transmitting a request packet from said client to said server, said request packet specifying in advance a priority class upon distribution of said content packet, and

said server includes a portion for transmitting said content packet from said server to said client with said requested

14 priority class thus specified.

1 40. The controlling system of priority class setup according  
2 to claim 39, wherein said specified priority class of said request  
3 packet is modified in a case where said client judges that said  
4 content packet does not satisfy requested communication quality.

1 41. The controlling system of priority class setup according  
2 to claim 39, wherein said server performs accounting for said  
3 client in accordance with a priority class and quantity of said  
4 content packet.

1 42. The controlling system of priority class setup according  
2 to claim 40, wherein said server performs accounting for said  
3 client in accordance with a priority class and quantity of said  
4 content packet.

1 43. A transmitter device for transmitting a communication  
2 packet toward a communication network, said transmitter device  
3 comprising:

4 a monitoring portion for monitoring communication quality  
5 of said communication network by transmitting a performance  
6 monitoring packet to said receiver prior to transmission of said  
7 communication packet; and

8 a priority class deciding portion for deciding a priority  
9 class of said communication packet based on a monitoring result  
10 and transmitting said communication packet by said transmitter  
11 device.

1 44. A transmitter device for transmitting a communication  
2 packet toward a communication network, said transmitter device  
3 comprising:

4 a monitoring portion for monitoring communication quality  
5 of said communication network by transmitting a performance  
6 monitoring packet to a receiver in the midst of transmission  
7 of said communication packet; and

8 a priority class deciding portion for deciding a priority  
9 class of said communication packet for transmission based on  
10 a monitoring result and transmitting said communication packet.